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 TI Copper alloy wires for bonding of semiconductors
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AB The Cu alloy for wires contains Ti 0.0005-0.2% and .gtoreq.1 of Mg, Fe, Ni, Cr, Si, Co, Mn, Al, B, and Zr 0.0005-0.2% (total), optionally with Zn, Sn, Ca, Be, Y, and/or rare-earth metals for .ltoreq.0.2% total. The fine wires form a ball tip with a hardness close to that of Au and a round shape show good bonding to inner lead frames and can be manufd. at low cost. Thus, molten Cu of 99.997% purity was alloyed to contain 0.051 Ti and 0.0006% Fe, and cast into a billet of 25 mm diam. The billet was alternately cold-rolled and annealed at 300.degree. in vacuum to give a rod of 8 mm diam. The trimmed rod was alternately drawn with draft 50% and annealed in vacuum at 300.degree. to give a bonding wire of 25 .mu. diam. The wire showed tensile strength of 9 g, and a good ball shape before and after a bonding test, vs. 4 g and a bad shape after bonding with a Cu wire.